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Rural Water Supplies in South Dakota : McPherson County

Walter V. Searigh
Cooperative Extension Service, South Dakota State College

Elmer E. Meleen
Cooperative Extension Service, South Dakota State College

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McPherson County

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RURAL WATER SUPPLIES

IN

SOUTH DAKOTA

McPHERSON COUNTY

BY

WALTER V. SEARIGHT

AND

ELMER E. MELEEN

PREPARED BY THE WORK PROJECTS ADMINISTRATION AS A REPORT ON THE WELL SURVEY CONDUCTED AS WORK PROJECTS ADMINISTRATION OFFICIAL PROJECT 665-74-3-126; SPONSORED BY THE EXTENSION SERVICE AND THE EXPERIMENT STATION SOUTH DAKOTA STATE COLLEGE, IN COOPERATION WITH THE STATE GEOLOGICAL SURVEY.

JANUARY 1940

FORWARD

This study was first proposed as a project of the Mineral Resources Committee of the State Planning Board under the direction of the State Geological survey and undertaken as a Work Projects Administration project sponsored by the State Planning Board, and was continued under the Planning Board until that body was abolished July 1, 1939 by the State Legislature. At that time sponsorship was transferred to the South Dakota Agricultural Experiment Station and the State College Extension Service, South Dakota State College. Field work was begun October 1, 1938 and was practically completed by February 15, 1939. Workers were assigned in the several counties under the supervision and direction of the County Agricultural Agents and Field Supervisors who were employed by the Work Projects Administration. Questionnaires were mailed out from the offices of the County Agents and were checked and tabulated in these offices. The material was then forwarded to the central office for final tabulation and analysis under the direction of Elmer E. Meleen and Walter V. Searight.

Particular credit should be given to the individual County Agricultural Agents in the various counties of the state who arranged the contacts with the individuals from whom these data were collected, furnished a large portion of the necessary supplies for field work, and directed the workers engaged in collecting field data. Without this assistance in gathering basic data, this study could not have been conducted. The value of the report is therefore in direct proportion to the accuracy and adequacy of these basic data.

INTRODUCTION

PURPOSE

This report on rural water supplies of South Dakota has been prepared to present data recently made available on the types and the sources of water supply, exclusive of stream, lake and dam waters. The information presented is of importance to evaluate present supplies. It should also prove useful as a basis for further development of supplies where they are needed or become necessary. Further, it is hoped that the facts presented may prove of value in any program of water conservation.

SOURCES OF INFORMATION

Questionnaires were sent to all, or essentially all of the farmers of the state, asking for complete data on farm wells and supplementary supplies, with the exception of the supplies above noted. A most gratifying number returned questionnaires, actually 60.1% average for the entire state. The coverage is probably more than 60.1% since it is likely that many unanswered inquiries were those to farmers who were without wells, the type of supply emphasized in the questionnaires. The data thus obtained were supplemented with information contained in the files of the State Geological Survey, the office of the State Engineer, and reports of the United States Geological Survey. This supplementary information, together with that contained in questionnaires was used in making the well location maps included in this report.

PRODEDURE

All data from the questionnaires were tabulated and analyzed statistically by counties, which were made the areal units of study. Within the county,

Acknowledgments - The authors wish especially to acknowledge and commend the conscientious assistance of Mr. E. L. Woodburn, Supervisor, for careful and painstaking supervision of statistical work. The authors also desire to express appreciation for the constant interest and support of this project by Mr. Bob Butts, Director of Research and Records Projects, South Dakota Work Projects Administration.

supplies were allocated as to kind on county maps. Since shallow waters are the most important source of rural supply in South Dakota, wells 200 feet deep and less were plotted on county maps from which maps indicating depths of wells by 50 foot intervals were made. Springs, shown on the well location map, and cisterns were also tabulated as important supplementary supplies, although the latter do not appear on maps or in the tables in this report.

PRESENTATION OF DATA

For convenience and utility, this report has been divided into sections each covering one county, and each county section bound separately. Each county report contains the following material wherever possible.

1. Well Location Map: This map shows the location of all wells and springs within the county, so far as information is now available. These have been plotted in such a manner that artesian and shallow wells can be differentiated readily by the reader. Artesian wells, where they occur, are divided into flowing and pumped. Artesian wells showing decreased flow and those reported as controlled are also indicated by symbols. Shallow wells are differentiated as adequate and inadequate, and dry holes as of 1938 are located. Wells from other sources of information other than questionnaires collected by this survey are shown in blue.

2. Shallow Well Map: This map shows, as accurately as possible, in 50 foot intervals, the depths at which shallow supplies are commonly obtained. Where shallow wells are abundant, as indicated by the well location map, the map is as accurate as the information on which it is based, but where such wells are sparsely distributed errors are likely to occur. In many places reports of shallow wells are absent in which case the area has been left blank.

3. Table of Pumped Wells, from 0 to 200 feet (inclusive) in depth: This table shows minimum, maximum, and average depths of wells within the county, as reported in the questionnaires. Tabulations are by townships. The general character of the water, hard, medium, and soft, as reported by farm-

ers, and the number of wells suitable or unsuitable for drinking are shown in this table. Further, the adequacy of supply, as indicated on the questionnaires, and use for irrigation are shown here.

4. Table of Wells greater in depth than 200 feet: Minimum, maximum, and average depths are indicated. Character, reported as hard, medium or soft is tabulated. Adequacy and use for irrigation are shown as in the preceding table.

5. Table of flowing wells: Minimum, maximum, and average depths are shown together with general character and use for irrigation. The volume of flow as reported, and the number of flowing wells reported as equipped with control valves is also included in this table.

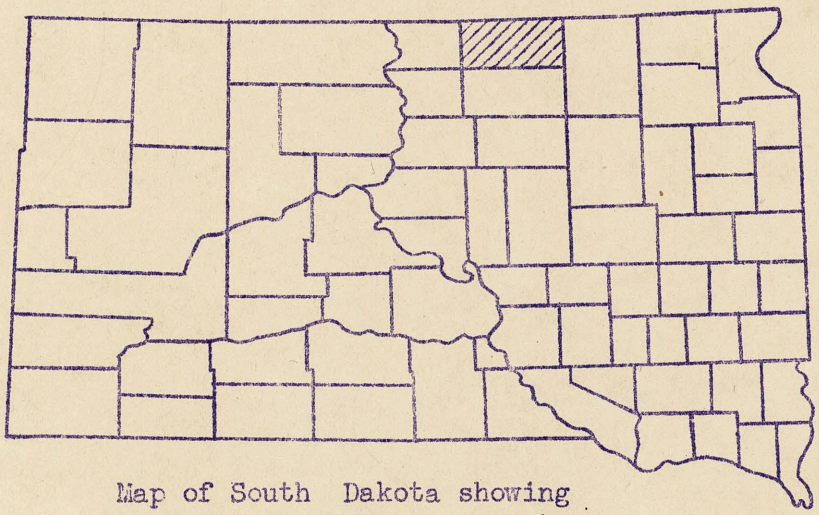
SUMMARY OF STATE SUPPLIES

In the entire state, a total of 48,479 wells were reported in response to questionnaires, returned by 60.1% of the recipients. If those who did not respond have a number of wells in proportion to those who reported, there are approximately 80,000 wells in South Dakota. There are possibly many less than this number since several counties with large numbers of wells returned over 75% of the questionnaires and since many farmers without wells did not reply because they were not requested to do so in the formal questionnaire. Of the wells reported, 16.2% are artesian, including both pumped and flowing wells. Shallow wells are 83.8% of the wells reported. Wells from shallow sources are thus obviously by far the most important means for obtaining water in rural South Dakota.

Important supplementary supplies are cisterns and springs. Roughly, there is more than one cistern to each 40 wells. Many springs are reported, however, in counties with very few wells, so that in some localities they are of considerable importance.

MCPHERSON COUNTY

McPherson county lies in the north central part of South Dakota. It is bounded on the north by North Dakota, on the east by Brown county, on the south by Edmunds county, and on the west by Campbell and Walworth counties.



Map of South Dakota showing location of McPherson county

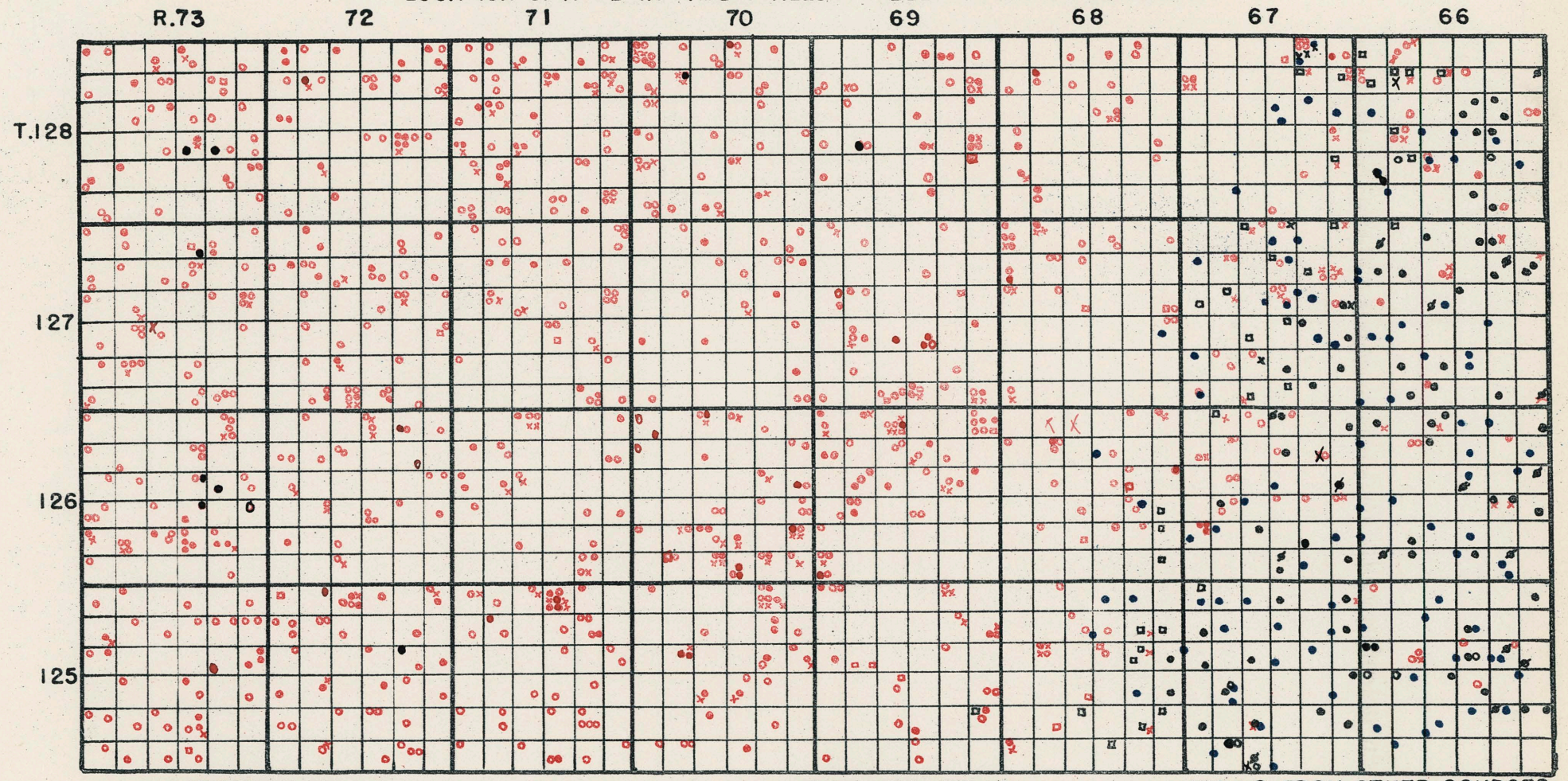
The population of the county as given by the 1935 state census is 8,652. Most of the county is in farms; 88 per cent (651,388 acres). The total farmed area is divided into 1,243 farms. The average farm unit is 524 acres in the county. Wheat, barley, hay, corn, oats, rye and flax are the field crops, being produced in the order named. Livestock is important, cattle, hogs, and sheep being raised in the order named. Dairy products are also important.*

Farm acreage devoted to livestock and dairy cattle requires generally distributed sources of water supplies. The supplies required are not great, but adequate and constant supplies of suitable water at relatively low cost are necessary to operate farms of these sizes and organization profitably. The well location map of McPherson county shows that, in general, water supplies are available and widely distributed.

On the well location map of McPherson county, all flowing and all deep pumped wells obtaining water from the Dakota-Lakota sandstones are shown in black as artesian wells. All other wells are shown in red and are called shal-

*South Dakota Agricultural Statistics, Annual Report, 1937.

LOCATION OF ARTESIAN AND SHALLOW WELLS IN McPHERSON COUNTY



ARTESIAN WELLS

- O FLOWING WELLS—STEADY OR INCREASING
- ● FLOWING WELLS—DECREASED FLOW
- X CEASED FLOWING
- □ PUMPED
- / CONTROLLED WELLS ⌀ ⌀

SHALLOW WELLS

- O ADEQUATE SUPPLY
- ● INADEQUATE SUPPLY
- X DRY WELLS
- □ SPRINGS

● WELLS FROM OTHER SOURCES

low wells regardless of depth. On all other maps and in tables and text of this report, the term shallow wells applies to all wells 200 feet or less, and those greater than 200 feet deep are treated as deep wells including all artesian wells except those flowing wells 200 feet or less in depth.

Questionnaires returned from McPherson county have a 62 per cent coverage with information on 897 wells and 25 springs.

DEPTH AND DISTRIBUTION

Wells are widely distributed over McPherson county and are numerous in many places and sparse in others. (See well location map.) Six townships, T.125N., R.66W., T.125N., R.68W., T.126N., R.66W., T.127N., R.66W., T.128N., R.66W., and T.128N., R.67W., reported less than one well per two square miles of area. The area covered by these townships is a rather limited land area in the eastern and southeastern parts of the county.

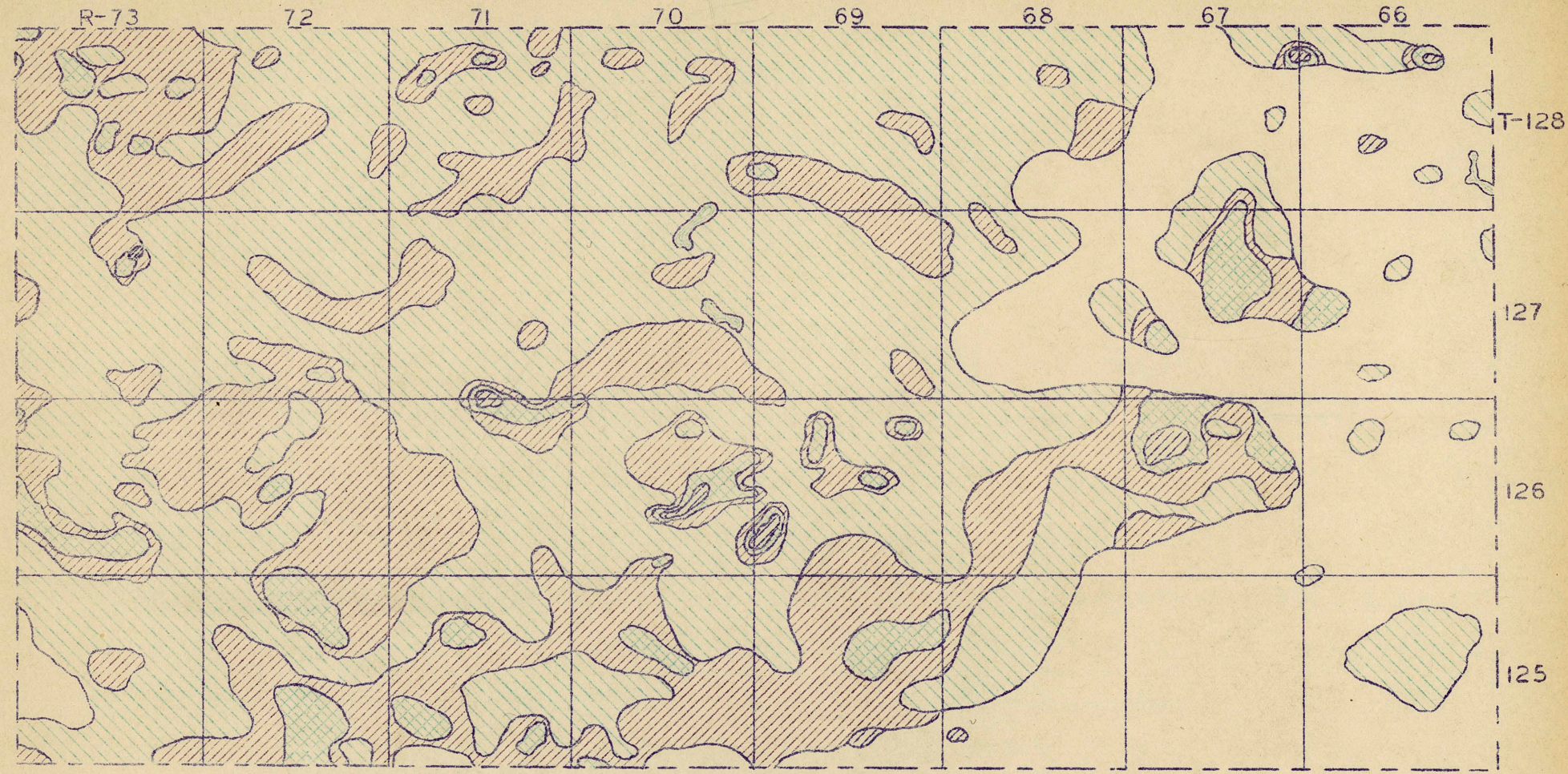
Shallow wells:Most of the water supplies of McPherson county is obtained from shallow wells, since approximately 80 per cent of all wells reported were shallow wells. However, one townships, T.125N., R.67W., reported no shallow pumped wells. Sixty four and four tenths per cent of all shallow wells were reported 0 to 50 feet deep; 25.2 per cent 50 to 100 feet; 8.8 per cent 100 to 150 feet; and 1.6 per cent 150 to 200 feet. Approximately 90 per cent of all shallow wells reported were less than 100 feet in depth and only 1.6 per cent over 150 feet.

In seven townships all wells reported were shallow. These are tabulated below;

T.127N., R.68W.		T.127N., R.71W.		T.128N., R.71W.		T.128N., R.73W.
127	70	128	68	128	72	

In five townships, more than half of all wells were reported to be shallow as listed in the table which follows:

McPHERSON COUNTY



SHALLOW WELLS (0-200 FT)

DEPTHS AT WHICH SUPPLIES ARE COMMONLY OBTAINED

0-50 FT.

50-100 FT.

LAKES

100-150 FT.

150-200 FT.

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MILES

Twp.	Rge.	Per Cent Shallow	Twp.	Rge.	Per Cent Shallow
125N	69W	68.4	126N	67W	56.5
125	72	68.5	128	67	64.2
126	66	54.5			

Five townships reported less than one third of all wells to be shallow as tabulated below:

Twp.	Rge.	Per cent Shallow	Twp.	Rge.	Per cent Shallow
125N	66W	28.5	127N	67W	33.3
125	67	24.	128	68	25.
125	68	28.2			

One township, T.127N., R.66W. reported only 13.1 per cent of the wells shallow. In two townships, shallow flowing wells occurred; in T.126N., R.73W. and T.128N., R.73W., reporting four and two such wells respectively.

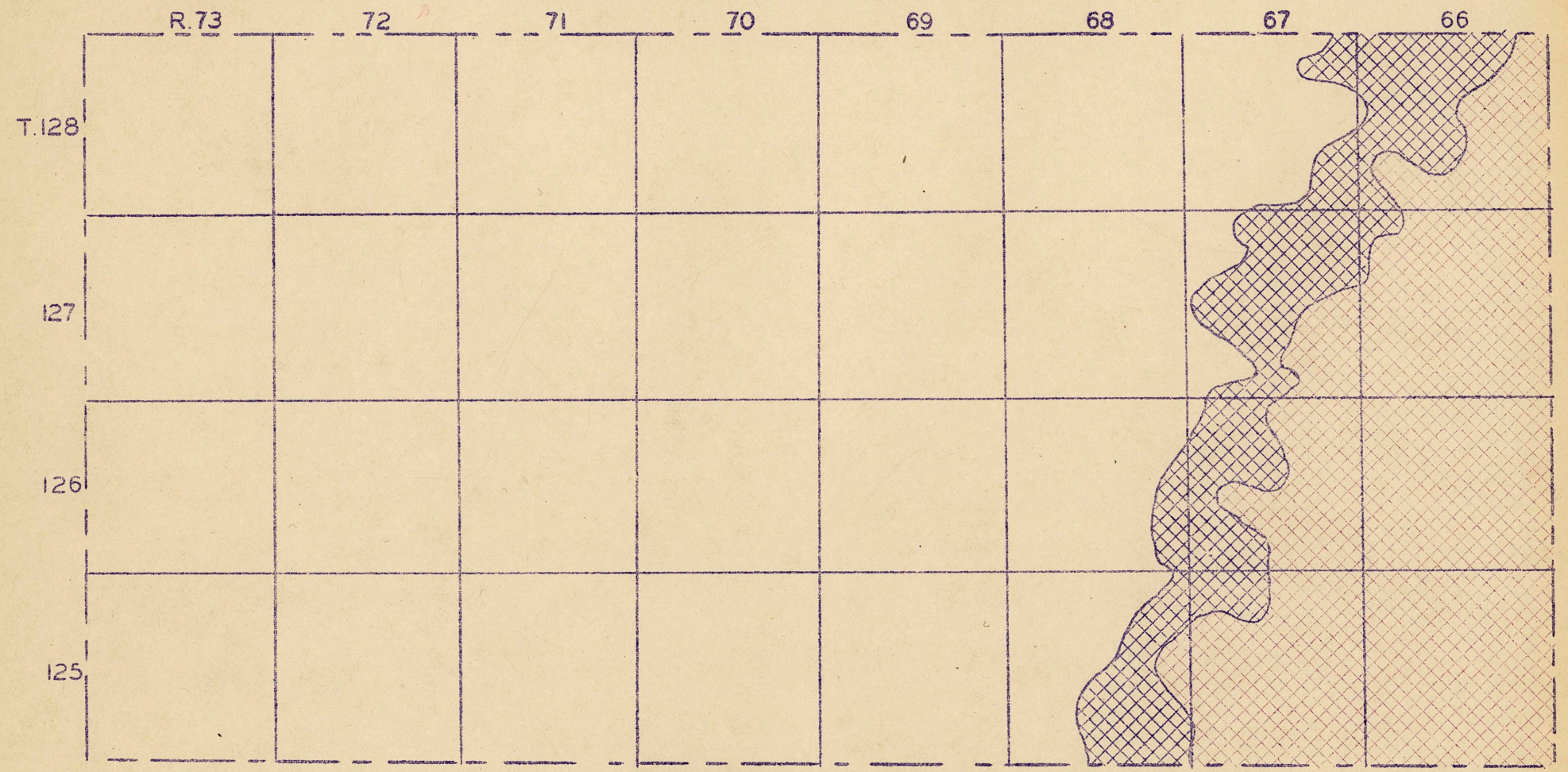
Deep wells: Approximately one fifth of the wells of McPherson county are deep wells. Of the total of 897 wells reported in the county, 199 or 20 per cent were reported as deep pumped or deep flowing. Of this figure, 99 were deep pumped wells (see table 2 for distribution by townships), and 100 were reported as flowing wells (see table 3 for distribution by townships). The deep flowing wells with the deep pumped wells, make a total of 199 wells deeper than 200 feet. The deep flowing wells were reported from the following townships varying from 2 per cent to 76 per cent of the total number of wells in these townships which are mostly in the southeast part of the county.

Twp.	Rge.	Number of Wells	Per cent of Total Wells
125N	66W	15	71.4
125	67	17	76.
125	68	2	70.5
125	72	1	31.4
126	66	15	45.4
126	67	11	43.3
127	66	18	8.6
127	67	6	66.6
127	73	1	2.7
128	66	12	75.
128	69	1	4.
128	70	1	2.7

Pumped wells reported varied in depth from 204 to 1250 feet, most of them being more than 500 feet deep (see table 2).

The average volume of flow from the flowing wells varied from two to

ARTESIAN AREAS 1938



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MILES
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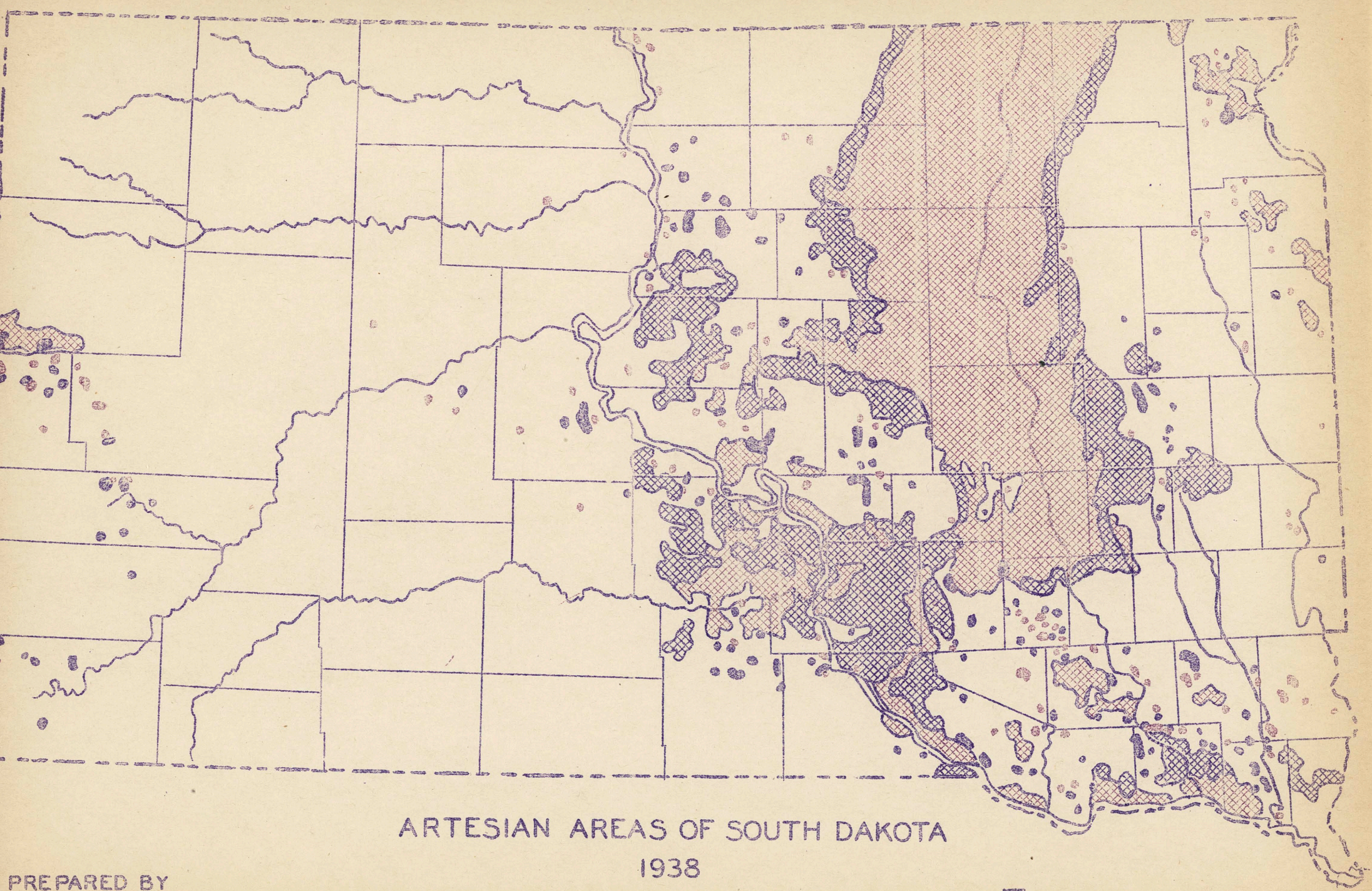

ARTESIAN AREAS OF SOUTH DAKOTA

1938

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W.P. 3636

FLOWING WELLS

PUMPED ARTESIAN WELLS

five gallons per minute. A total of 16 wells were reported to be equipped with control valves.

CHARACTER OF WELL WATERS

In order to determine the character of the water, users were asked to indicate whether they considered their supply to be hard, moderately hard, or soft. Most shallow wells produce hard water whereas considerable numbers of the deep wells are sources for soft water.

Of 692 shallow pumped wells, 43.6 per cent were described as hard, 42 per cent as moderately hard, and 13.5 per cent as soft. Approximately 85 per cent of the shallow wells throughout the county produced hard water. The wells producing soft water were few in number and distributed throughout the county (see table 1).

Though the water in these wells was hard, most of them produced suitable drinking water. Only 76 wells, or 8.2 per cent of the total reported were unsuitable for drinking. There are several reasons for unsuitability among which surface contamination or objectionable chemical ingredients are possible.

Of the 99 deep pumped wells (see table 2), 23 per cent were described as hard, 38.4 per cent as moderately hard, and 38.4 per cent as soft. Thus, 61 per cent of all deep pumped wells were considered hard in character. Only seven of these wells were unsuitable for drinking purposes.

The water from shallow and deep pumped wells differs greatly from flowing wells. Most of the water from deep flowing wells in this county produces soft water. Of the 100 deep flowing wells, only 6.7 per cent were considered hard, 21 per cent reported moderately hard, and 70.8 per cent as soft. Wells of this type and depth are found in a small area in the county as reported under depth and distribution. Only 5 of the 100 flowing wells were reported as unsuitable for drinking which might indicate lack of knowledge concerning the chemical content.

ADEQUACY OF SUPPLY

Water supplies, according to the questionnaires, are adequate for present needs. Conditions may vary, however, and present supplies, especially shallow water, may prove inadequate during dry cycles in this or surrounding land areas.

Of 692 shallow pumped wells reported only 28.9 per cent was considered inadequate for farm use. The inadequate supplies were evenly distributed throughout the county with the exception of a few townships. (See table 1.)

Of 99 deep pumped wells, 22 per cent were reported inadequate. These inadequate wells were scattered throughout the county among deep wells, (see table 2).

The water supplied by flowing wells is commonly adequate. However, 100 deep flowing wells, 23 per cent, were reported inadequate, (see table 3).

IRRIGATION

Only three deep pumped wells were used for irrigation, and six of the deep flowing wells devoted to this use.

SUPPLEMENTARY SUPPLIES

Springs and cisterns are important supplementary water supplies in McPherson county.

A total of 29 springs were reported by the questionnaires. Of these, 86 per cent occurred in the south central part of the county. These are tabulated below showing the percentage of springs to wells, total number of springs and total wells and springs. Springs were well distributed and ranged from two per cent to 24 per cent of the total number of wells and springs in these townships as tabulated below:

Twp.	Rge.	Springs	Percentage of Springs	Number of Wells & Springs
125N	68W	3	13.	20
125	69	3	10.	22
125	72	1	5.2	36
125	73	1	24.3	33
126	68	2	8.	22

(continued)

Twp.	Rge.	Springs	Percentage of Springs	Number of Wells & Springs
126N	69W	3	6.7	38
126	70	1	23.8	37
127	68	3	12.	21
127	69	2	6.6	30
127	71	1	3.1	30
127	72	1	2.3	39
127	73	1	19.8	38
128	67	1	5.3	15
128	69	1	3.2	26
128	73	1	2.	36

Of the 25 springs reported on as to character of water, 28.5 per cent were hard, 33.3 per cent moderately hard, and 38 per cent soft. Thus 71 per cent was soft or moderately hard. Only one spring was reported as being unsuitable for drinking purposes.

In reply to questionnaires as to usage made of spring water, 13 were used for stock only, 11 for stock and domestic purposes, and one for domestic use. Springs appear to be used for stock watering purposes.

Cisterns are used extensively as a supplementary water supply. A total of 150 were reported in the county. In relation to the total number of wells shown by townships, there appeared to be slightly more than one cistern for each five wells. Cisterns are used for drinking purposes where they are inadequate well supplies. A most important use of cisterns develops in areas where the regular supply is too hard for laundry use, and water from cisterns is used to supplement such supplies. The table below illustrates the percentage of cisterns found in townships in the county. Cisterns are widely scattered throughout the county, each township having at least one and 14 were reported in T.128N., R.73W.

Twp.	Rge.	Percentage of Cisterns	Twp.	Rge.	Percentage of Cisterns
125N	68W	13.	127N	69W	9.9
125	69	15.3	127	71	6.2
125	72	5.2	127	72	7.1
125	73	24.4	127	73	26.5
126	68	87.	128	67	21.
126	69	11.6	128	69	18.7
126	70	11.9	128	73	28.
127	68	12.			

McPHERSON COUNTY

Table 1.

DATA ON PUMPED WELLS FROM 0 TO 200 FEET (INCL.) IN DEPTH

LOCATION		Number of Wells	DEPTH OF WELLS			CHARACTER OF WATER					ADEQUACY OF SUPPLY			
Twp.	Rge.		Min.	Max.	Ave.	Hard	Med.	Soft	Corrode Casing	Unsuitable for Drinking	Adequate	Inade-quate	Number used for Irrigation	Approximate Acres Irrigated
125	66	6	12	26	19	4	1	-	-	-	6	-	-	-
125	67	-	-	-	-	-	-	-	-	-	-	-	-	-
125	68	5	4	200	40	4	1	-	2	2	3	2	1	1/4
125	69	13	12	165	60	5	6	2	2	1	10	3	-	-
125	70	22	11	133	49	11	9	2	7	6	12	10	3	3/8
125	71	34	9	145	50	15	10	4	5	1	26	8	5	3/8
125	72	24	9	135	60	11	11	2	2	1	19	5	2	-
125	73	24	7	64	22	10	9	4	3	3	17	7	4	4
126	66	3	19	34	26	1	1	-	-	-	3	-	-	-
126	67	17	14	196	85	3	10	2	-	3	14	3	-	-
126	68	16	6	70	38	12	1	3	2	-	13	3	1	1
126	69	33	4	194	45	17	8	8	9	2	22	11	5	3 5/8
126	70	33	6	197	47	14	12	6	2	2	19	14	4	7/8
126	71	20	10	153	56	8	9	3	7	2	12	8	1	1/8
126	72	22	15	104	59	12	8	1	4	2	20	2	3	1/4
126	73	33	12	143	57	9	14	8	2	-	27	6	5	7/8
127	66	3	18	143	60	2	1	-	1	1	1	2	-	-
127	67	11	12	150	99	6	4	1	3	3	9	2	1	-
127	68	19	12	109	35	11	6	2	6	2	13	6	2	-
127	69	27	9	88	33	15	10	2	6	3	18	9	3	3/8
127	70	20	8	85	35	7	11	2	4	-	14	6	2	1/8
127	71	29	19	94	35	9	15	5	4	2	25	4	2	1/2
127	72	37	8	115	43	9	22	5	6	1	27	10	6	1/4
127	73	36	8	165	39	8	26	2	2	7	32	4	5	5/8
128	66	6	7	200	73	3	2	1	1	-	4	2	-	-
128	67	9	14	200	38	3	5	1	1	1	6	3	-	-
128	68	20	11	68	26	12	7	1	2	-	12	8	-	-
128	69	24	11	140	34	10	11	2	7	6	13	11	2	1/8
128	70	35	10	96	40	17	12	5	7	5	24	11	4	1
128	71	48	11	126	44	21	19	8	4	2	33	15	5	2 1/2
128	72	30	12	100	35	10	17	2	5	4	15	15	6	1 1/2
128	73	33	8	135	62	15	15	2	6	2	23	10	9	1 5/8
Total		692				294	293	86	112	64	492	200	82	20 3/8

McPHERSON COUNTY

Table 2.

DATA ON PUMPED WELLS OVER 200 FEET IN DEPTH

LOCATION		Number of Wells	DEPTH OF WELLS			CHARACTER OF WATER					ADEQUACY OF SUPPLY			
Twp.	Rge.		Min.	Max.	Ave.	Hard	Med.	Soft	Corrode Casing	Unsuitable for Drinking	Adequate	Inade-quate	Number used for Irrigation	Approximate Acres Irrigated
125	67	2	-	-	1300	-	-	1	-	-	1	1	-	-
125	68	10	275	1560	1164	3	3	4	7	2	8	2	-	-
125	69	6	300	1400	548	1	4	1	-	1	6	-	-	-
125	70	4	201	503	334	2	2	-	1	2	2	2	-	-
125	71	3	300	477	381	1	1	1	1	1	3	-	1	1/4
125	72	10	300	380	352	3	3	4	3	-	8	2	1	1
125	73	8	250	420	319	1	4	3	2	1	7	1	-	-
126	67	2	1250	1280	1265	-	-	1	-	-	1	1	-	-
126	68	4	213	1400	987	-	2	1	-	-	2	2	-	-
126	69	2	425	455	440	-	2	-	1	2	2	-	-	-
126	70	3	221	318	260	1	1	1	1	-	3	-	-	-
126	71	1	-	-	387	1	-	-	-	-	1	-	-	-
126	72	2	295	332	314	-	1	-	-	-	2	-	1	1/8
126	73	2	384	450	417	-	1	1	1	-	1	1	-	-
127	66	1	-	-	1200	-	-	1	-	-	-	1	-	-
127	67	16	204	1440	1043	2	4	8	4	3	12	4	-	-
127	69	1	-	-	221	1	-	-	-	-	1	-	-	-
127	72	1	-	-	366	-	-	1	-	-	1	-	-	-
128	66	16	210	1300	742	4	7	3	4	2	11	5	-	-
128	67	5	210	1700	966	1	-	4	-	-	5	-	-	-
Total		99				21	35	35	25	14	77	22	3	1 3/8

Note: No wells reported from the following townships and ranges for this group: T.125N.,R.66W; T.126N.,R.66W; T.127N.,R.68,70,71,73W; T.128N.,R.68,69,70,71,72,73W.

McPHERSON COUNTY
Table 3
DATA ON FLOWING WELLS

LOCATION		Number of Wells	DEPTH OF WELLS			CHARACTER OF WATER					ADEQUACY OF SUPPLY					
Twp.	Rge		Min.	Max.	Ave.	Hard	Med.	Soft	Corrode Casing	Unsuitable for Drinking	Adequate	Inade-quate	Number used for Irrigation	Approx. Acres Irrigated	Ave. Gallon Per Min	Number Con-trolled
125	66	15	900	1400	1169	-	2	12	3	1	12	3	2	2 3/4	4.5	2
125	67	17	1050	2100	1270	-	1	16	3	1	13	4	-	-	5.5	1
125	68	2	1450	1458	1454	-	-	2	2	-	2	-	-	-	5.5	-
125	72	1	-	-	125	-	1	-	-	-	1	-	-	-	2.0	-
126	66	15	900	1500	1244	-	5	10	3	1	12	3	-	-	3.2	4
126	67	11	1000	1400	1355	-	1	9	1	-	10	1	1	1/4	3.2	3
126	73	4	25	80	59	-	1	3	-	-	4	-	-	-	2.6	1
127	66	18	1000	1600	1202	2	5	11	6	2	11	7	1	3/4	3.6	4
127	67	6	1238	1400	1301	1	1	4	2	-	4	2	-	-	2.4	-
127	73	1	-	-	63	-	1	-	-	-	1	-	-	-	-	-
128	66	12	1200	1800	1305	2	3	6	1	-	9	3	2	1/4	2.7	1
128	69	1	-	-	9	1	-	-	-	-	1	-	-	-	-	-
128	70	1	-	-	69	-	1	-	-	-	1	-	1	1/4	-	-
128	73	2	93	110	102	1	1	-	1	-	2	-	1	1	2.5	-
Total		106				7	23	73	22	5	83	23	8	5 1/4	-	16

Note: No wells reported from the following townships and ranges for this group: T.125N.,R.69,70,71,73W; T.126N.,R. 68,69,70,71,72W; T.127N.,R.68,69,70,71,72W; T.128N.,R.67,68,71,72W.

McPherson County Well Notes

The following are pertinent remarks quoted from questionnaires returned by farmers and are included opinions of the water situation as expressed by the individual farmers and must be so applied.

T.125N., R.68W. NE¼ Sec. 5	53 feet: "At ten and 15 feet you strike quick sand and not sufficient water."
T.125N., R.68W. SE¼ Sec. 24	1458 feet: (artesian) "Character of water bearing material is hard rock."
T.125N., R.69W. NW¼ Sec. 2	468 feet: "Water salty. Water bearing material - slate."
T.125N., R.69W. SE¼ Sec. 24	347 feet: "Too salty for drinking purposes. Character water bearing material - loose slate."
T.125N., R.70W. NE¼ Sec. 17	430 feet: "Has gas fumes, will burn. Water bearing material is slate above soap stone. Not satisfactory for drinking. Have another 133 ft. well that is all time filling in."
T.126N., R.70W. NW¼ Sec. 3	15 feet: "Reason for not getting water is due to dry years and not going down to deep vein."
T.126N., R.73W. NE¼ Sec. 2	28 feet: "Sheet water is from 80 - 110 ft. down but not very good. Alkali and bad odor. My wells always have water."
T.127N., R.66W. SW½ Sec. 8	1260 feet: (artesian) "Iodine."
T.127N., R.67W. SW¼ Sec. 12	87 feet: "Our first well was 26 feet deep in slate and had an insufficient amount of alkali water fit only for stock. Second well was 50 feet deep in slate, abundant water but high mineral content. State University test on this water showed that stock could not drink it and live."
T.127N., R.68W. NW¼ Sec. 5	65 feet: "Difficulty is dry holes and rock bottom."
T.127N., R.68W. NE¼ Sec. 24	12 feet: "Water bearing material rock."
T.127N., R.70W. SE¼ Sec. 36	60 feet: "Almost unlimited supply of water arises almost to top of the well. The soil is mostly blue clay and this gives the water an unpleasant taste for drinking."

T.127N., R.72W.
SE¼ Sec. 10

40 feet:
"The most trouble we have in constructing a well is quick sand. This sand is so fine it stops the flow of water and has to be dug up at least once a year. I have to use sand points all the time in my well otherwise I don't have enough water."

T.128N., R.66W.
SW¼ Sec. 5

217 feet:
"Water turns dark and smells terrible."

T.128N., R.66W.
SE¼ Sec. 7

1200 feet: (artesian)
"There is a strong vein of water at about 40 feet that could be used for stock but which is rather salty and not very good for house use. The artesian water is alright."

T.128N., R.67W.
Sec. 2

No well:
"Many fine springs in the hills furnish plenty of water."

T.128N., R.69W.
SW¼ Sec. 2

19 feet:
"Produce enough water in wet years for 60 to 70 head of cattle but in dry years produce very little. The difficulty in construction is the sand coming in with the water. Have experienced great difficulty in making wells and finding enough water for my stock and when pumped a lot water usually gets dirty and unfit for domestic use."

T.128N., R.70W.
NW¼ Sec. 3

No depth given:
"I always had trouble to get a good well on my place. I never got enough water and the water in my present well is not sufficient and has such a bad odor and taste that it cannot be used in the house."

T.128N., R.72W.
NW¼ Sec. 23

35 feet:
"Four years ago we didn't have any water and we looked all over the farm and some places we went down 100 feet. The water we got now has a little oil and tastes kind of funny."

EXTENSION SERVICE

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